

## NEW DATA ON THE DISTRIBUTION OF XYLOPHAGOUS INSECTS OF OAK AND THEIR PARASITIDS AND INQUILINES IN SERBIA

ČEDOMIR MARKOVIĆ<sup>1\*</sup> and ALEKSANDAR STOJANOVIĆ<sup>2</sup>

1 University of Belgrade, Faculty of Forestry, Kneza Višeslava 1, 11030 Belgrade, Serbia

\*E-mail: markovicc@ptt.rs (corresponding author)

2 Natural History Museum, Njegoševa 51, 11000 Belgrade, Serbia

E-mail: aleksandar@nhmbeo.rs

### Abstract

A study of the biology of the oak bark beetle *Scolytus intricatus* at 41 localities in Serbia during the period from 1992 to 1998 yielded an abundance of data on the distribution of insects associated with it or inhabiting the same plant material as it. Some of these data have been published, but the majority have not. Previously unpublished data are presented in this study, providing a list of 58 insect species from 4 orders, 15 families and 45 genera. For each insect, the locality, date of collecting, as well as the species of oak on which it was collected are listed.

KEY WORDS: fauna, bark borer, wood borer, natural enemy

### Introduction

Forest decline is a great problem in Serbia. One of the most important causes of this phenomenon is the presence of vascular fungi of the genus *Ophiostoma* H. & P. Sydow (Ophiostomatales: Ophiostomataceae) (Karadžić & Marković, 1996; Golubović-Čurguz *et al.*, 2014). Developing in the conducting vessels of attacked trees, they cause clogging, which results in death. The most important transmitter of their spores is the oak bark beetle *Scolytus intricatus* (Ratzeburg, 1837) (Coleoptera: Curculionidae). Because little was known about it in Serbia and the world in the 80's and 90's of the last century, it was thoroughly investigated in Serbia during the period 1992 to 1998 (Marković, 1995, 1999). Apart from other results, an abundance of data was then collected on insects associated with it or inhabiting the same plant material (usually branches of physiologically weakened, freshly-cut, blown-down or broken-off stems of oaks with smaller diameter). Some of the data have been published (Marković, 2005; Marković & Stojanović, 2015), but the majority have not. Because there is still a

scarcity of data on the distribution of many of the insect species found in Serbia, we decided to present these unpublished data in this study.

## Materials and methods

The species listed in the present study were obtained from samples collected at 41 localities in Serbia (Table 1) during the period 1992 to 1998. Branches of oak inhabited by the larvae and pupae of the oak bark beetle were found at each of the visited localities, and cuttings 30-40 cm long and 3-15 cm in diameter were taken from them. In the laboratory, branch cuttings were placed in emergence boxes, which were kept in an insectarium under field conditions. During the flight of adult insects, the emergence boxes were examined daily. Emerged adults were collected, killed with ether, prepared, identified and deposited in the insect collection of the Department of Forest Protection of the Faculty of Forestry – University of Belgrade. Insect species were identified by Č. Marković and A. Stojanović (Coleoptera); A. Stojanović and M. Brajković (Hymenoptera); Lj. Andus (Thysanoptera); and D. Simova-Tošić and A. Stojanović (Diptera).

The names of the species used in this paper were taken from the lists and databases of Noyes (2003), de Jong *et al.* (2014), Skuhřavá *et al.* (2014) and Danilevsky (2019). Wood samples from which the adults of the listed species were obtained were collected by Č. Marković and A. Stojanović.

Table 1. Localities on which the research was conducted.

No.	Locality	GPS coordinates
1	Aleksinac: Donje Suhotno	43°29' N, 21°39' E
2	Aleksinac: Glogovica	43°31' N, 21°44' E
3	Aleksinac: Gornji Krupac	43°31' N, 21°51' E
4	Aleksinac: Vakup	43°33' N, 21°42' E
5	Arandelovac: Banja	44°16' N, 20°37' E
6	Belgrade: Bežanija	44°49' N, 20°22' E
7	Belgrade: Košutnjak Park	44°46' N, 20°25' E
8	Belgrade: Lipovica Forest	44°38' N, 20°24' E
9	Belgrade: Vinča	44°46' N, 20°36' E
10	Bogovađa	44°19' N, 20°10' E
11	Boljevci: Crni Lug Forest	44°43' N, 20°13' E
12	Bovan Lake: Osoje	43°38' N, 21°43' E
13	Đerdap National Park: Boljetin	44°32' N, 21°59' E
14	Đerdap National Park: Velika Kamenica	44°33' N, 22°27' E
15	Đerdap National Park: Zlatica	44°29' N, 22°2' E
16	Majdanpek: Debeli Lug	44°22' N, 21°55' E
17	Mladenovac: Markovac	44°22' N, 20°40' E
18	Mt. Avala	44°21' N, 20°30' E
19	Mt. Deli Jovan	44°15' N, 22°12' E
20	Mt. Fruška Gora: Brankovac	45°9' N, 19°44' E
21	Mt. Goč	43°33' N, 20°50' E
22	Mt. Jelova Gora	43°51' N, 19°51' E
23	Mt. Kosmaj	44°27' N, 20°33' E

Table I – continued

No.	Locality	GPS coordinates
24	Mt. Miroč	44°33' N, 22°17' E
25	Mt. Venčac	44°15' N, 20°35' E
26	Mt. Zlatibor: Mačkat	43°47' N, 19°46' E
27	Obrenovac: Mala Moštanica	44°39' N, 20°17' E
28	Obrenovac: Zabran Forest	44°39' N, 20°13' E
29	Pečka Banja	42°43' N, 20°23' E
30	Prijepolje: Srijeteži	43°23' N, 19°39' E
31	Progar: Bojčin Forest	44°43' N, 20°09' E
32	Ralja: Trešnja	44°36' N, 20°33' E
33	Raška: Bukovik	43°12' N, 20°39' E
34	Smederevo: Begaljica	44°38' N, 20°42' E
35	Smederevska Palanka: Mikulja Forest	44°22' N, 20°59' E
36	Šid: Višnjićevo	44°59' N, 19°15' E
37	Stepojevac: Borački Gaj Forest	44°29' N, 20°17' E
38	Topola: Gornja Trnava	44°10' N, 20°45' E
39	Topola: Krčevac	44°16' N, 20°41' E
40	Valjevo: Carić	44°19' N, 19°50' E
41	Valjevo: Pećina Park	44°16' N, 19°53' E

## Results and discussion

Ninety-four species of insects were recorded on plant material inhabited by the oak bark beetle. A list of them was given in a previously published paper (Marković & Stojanović, 2011). For 58 species on that list, data on their distribution in Serbia were not published (Marković, 2005; Marković & Stojanović, 2015). These data are given in the list that follows. For some species from the list without new data on their distribution, it was known that they are widely disseminated in Serbia: *Callimus angulatus* (Schrank, 1789), *Chlorophorus varius* (Muller, 1766), *Exocentrus adspersus* Mulsant, 1846, *Phymatodes alni* (Linnaeus, 1767), *P. testaceus* (Linnaeus, 1758), *Plagionotus arcuatus* (Linnaeus, 1758) and *Xylotrechus antilope* (Schönherr, 1817) (Coleoptera: Cerambycidae) and *Taphrorychus villifrons* (Dufour, 1843) (Coleoptera: Curculionidae) (Glavendekić & Mihajlović, 2004; Ilić, 2005; Plečaš & Pavićević, 2007; Gnjatović & Žikić, 2010; Ilić *et al.*, 2013; Ilić & Ćurčić, 2013; Dobrosavljević & Mihajlović, 2014; Vukajlović & Živanović, 2014, 2015; Marković & Stojanović, 2015). For others, this was not the case because the groups to which they belong have not been sufficiently investigated in Serbia: *Agrilus angustulus* (Illiger, 1803) and *Chrysobothris affinis* (Fabricius, 1794) (Coleoptera: Buprestidae); and *Aspicolpus carinator* (Nees, 1812), *Doryctes leucogaster* (Nees, 1834) and *Polystenus rugosus* Förster, 1862 (Hymenoptera: Braconidae). There are also species that are rare, such as *Ropalopus femoratus* (Linnaeus, 1758) (Coleoptera: Cerambycidae) (Ilić *et al.*, 2013). However, for most of the species on the list it is still impossible to draw any conclusion about their distribution in Serbia because the available data are scarce.

The data cited in the present study were collected about 20 years ago. For a number of species, certain data on their distribution in Serbia have been published during this period (Glavendekić & Mihajlović, 2004; Ilić, 2005; Plečaš & Pavićević, 2007; Belokobylskij & Žikić, 2009; Gnjatović & Žikić, 2010; Žikić *et al.*, 2010;

Ilić *et al.*, 2013; Ilić & Ćurčić, 2013; Marković, 2013; Dobrosavljević & Mihajlović, 2014; Vukajlović & Živanović, 2014, 2015; Mihajlović, 2018). However, for many species, no data on their distribution in Serbia have ever been published. For this reason, we felt that it would be a good thing to publish the data at our disposal in the present paper.

This paper contains a list of 58 insect species from 4 orders, 15 families and 45 genera. Among them there are 27 species of parasitoids, 24 xylophagous species and 7 inquiline species (Marković & Stojanović, 2011). Most of them were found on localities Mt. Avala (30), Majdanpek: Debeli Lug (25), Belgrade: Košutnjak (22) and Obrenovac: Mala Moštanica (21). In terms of oak species, most species were obtained from *Quercus petraea* (Matt.) Liebl. (44), *Q. cerris* L. (28), *Q. frainetto* Ten. (28) and *Q. robur* L. (25) (*Q. virgiliana* (Ten.) Ten. (16), *Q. daleschampii* Ten. (7), *Q. rubra* L. (5), *Q. pubescens* Willd. (1)). The most frequently found species were *Agrilus angustulus* (Illiger, 1803) (Coleoptera: Buprestidae) and *Xylotrechus antilope* (Schönherr, 1817) (Coleoptera: Cerambycidae). *R. femoratus* was obtained among the other species. According to Ilić (2005), its finding in Tekija (northeastern Serbia) on 19.06.1995 was the first in the country, but the finding mentioned in the present study is older.

In the list that follows, all species are arranged in alphabetical order. For each species, information is given about the locality at which it was collected, the date of finding and the species of oak on which it was found. Because imagoes of all insect species were obtained by rearing in an insectarium, it is important to state that the dates given in the list do not refer to the time when they flew out in the insectarium, but rather to the time when the plant material from which they were obtained was collected in the field.

#### List of identified insect species

##### Xylophagous insects

##### Order Coleoptera

##### Family Anobiidae

*Oligomerus brunneus* (Olivier, 1790)

Majdanpek: Debeli Lug, 09.04.1992, *Quercus petraea*.

##### Family Bostrichidae

*Sinoxylon perforans* (Schrank, 1798)

Belgrade, Košutnjak Park, 22.07.1993, *Q. virgiliana*; Mt. Avala, 04.08.1994, *Q. petraea*.

##### Family Buprestidae

*Agrilus angustulus* (Illiger, 1803)

Aleksinac: Donje Suhotno, 13.08.1996, *Q. frainetto*; Aleksinac: Glogovica, 09.02.1993, *Q. frainetto*; Aleksinac: Vakup, 30.04.1996, *Q. frainetto*; Belgrade: Bežanija, 26.08.1997, *Q. petraea*; Belgrade: Košutnjak Park, 23.03.1994, 01.08.1994, 14.03.1996, 18.07.1996, 28.08.1997, *Q. virgiliana*, 01.08.1994, *Q. cerris* and *Q. rubra*, 17.07.1995, 28.08.1997, *Q. frainetto*; Belgrade: Lipovica Forest, 20.02.1993, 11.03.1994, 02.08.1994, 05.05.1995, 22.07.1995, 19.03.1996, *Q. cerris*, 20.02.1993, *Q. petraea*, 11.03.1994, 02.08.1994,

22.07.1995, 22.07.1996, *Q. frainetto*; Belgrade: Vinča, 03.05.1996, *Q. cerris*; Bogovada, 08.04.1994, *Q. cerris* and *Q. frainetto*; Boljevci: Crni Lug Forest, 28.02.1998, *Q. robur*; Bovan Lake: Osoje, 29.10.1992, 29.11.1992, 02.05.1996, *Q. cerris*, 07.07.1996, *Q. frainetto*; Đerdap National Park: Zlatica, 11.04.1992, 15.05.1992, 07.05.1993, *Q. petraea*; Majdanpek: Debeli Lug, 09.04.1992, 27.05.1992, 31.03.1994, *Q. petraea*; Mladenovac: Markovac, 04.04.1994, *Q. robur*; Mt. Avala, 29.10.1992, 23.04.1993, 17.10.1993, 04.08.1994, 04.05.1995, 25.07.1995, 09.04.1996, 28.07.1996, *Q. petraea*; Mt. Deli Jovan, 03.04.1998, *Q. petraea*; Mt. Fruška Gora: Brankovac, 13.03.1992, *Q. petraea*, 08.03.1998, *Q. cerris*; Mt. Goč, 17.05.1993, 23.05.1994, *Q. daleschampii*; Mt. Kosmaj, 31.07.1992, 15.11.1992, 01.12.1992, 15.01.1993, 19.01.1993, 31.01.1993, 15.02.1993, 15.03.1993, 01.04.1993, 15.04.1993, 01.05.1993, *Quercus* sp., 01.08.1992, *Q. frainetto*, 14.05.1993, 30.07.1993, 15.03.1994, 01.08.1994, 07.08.1994, 19.07.1995, 09.05.1996, *Q. cerris*; Mt. Venčac, 26.03.1994, *Q. frainetto*; Mt. Zlatibor: Mačkat, 19.11.1992, *Q. cerris*; Obrenovac: Mala Moštanica, 19.02.1993, 29.03.1994, 08.04.1996, 28.07.1996, *Q. cerris*, 03.08.1994, 21.07.1995, 08.04.1996, *Q. frainetto*, 03.08.1994, 03.05.1995, *Q. robur*; Prijepolje: Srijeteži, 15.12.1992, *Q. cerris*; Progar: Bojčin Forest, 10.04.1994, 05.08.1994, 02.05.1995, 27.07.1995, 06.08.1996, 14.02.1998, *Q. robur*, 05.08.1994, *Q. cerris*; Raška: Bukovik, 27.02.1992, *Quercus* sp.; Smederevo: Begaljica, 03.05.1997, *Q. cerris*; Smederevska Palanka: Mikulja Forest, 06.03.1993, 25.10.1994, *Q. cerris* and *Q. frainetto*; Stepojevac: Borački Gaj Forest, 09.04.1993, *Q. cerris*; Šid: Višnjićevo, 22.04.1994, *Q. robur*; Topola: Gornja Trnava, 12.04.1997, *Q. frainetto*; Topola: Krčevac, 27.03.1994, *Q. robur*; Valjevo: Carić, 15.04.1993, *Q. cerris* and *Q. frainetto*; Valjevo: Pećina Park, 15.04.1993, *Q. cerris*.

#### *Chrysobothris affinis* (Fabricius, 1794)

Aleksinac: Vakup, 30.04.1996, *Q. frainetto*; Belgrade: Košutnjak Park, 01.08.1994, 26.01.1995, *Q. cerris*, 01.08.1994, *Q. rubra*; Belgrade: Lipovica Forest, 13.03.1996, *Q. cerris*; Đerdap National Park: Zlatica, 07.05.1993, *Q. petraea*; Majdanpek: Debeli Lug, 31.03.1994, *Q. petraea*; Mladenovac: Markovac, 04.04.1994, *Q. robur*; Mt. Avala, 23.04.1993, 04.08.1994, 09.04.1996, *Q. petraea*; Mt. Deli Jovan, 03.04.1998, *Q. petraea*; Mt. Goč, 23.05.1994, *Q. daleschampii*; Mt. Jelova Gora, 19.11.1992, *Q. petraea*; Mt. Kosmaj, 09.05.1996, *Q. cerris*; Obrenovac: Mala Moštanica, 19.02.1993, 08.04.1996, *Q. cerris*, 03.08.1994, *Q. robur*, 21.07.1995, *Q. frainetto*; Progar: Bojčin Forest, 10.04.1994, 05.08.1994, 27.07.1995, *Q. robur*; Smederevska Palanka: Mikulja Forest, 25.10.1994, *Q. frainetto*; Topola: Krčevac, 27.03.1994, *Q. robur*.

#### *Coraebus florentinus* (Herbst, 1801)

Mt. Avala, 17.10.1993, *Q. petraea*.

#### Family Cerambycidae

##### *Callimus angulatus* (Schrank, 1789)

Belgrade: Košutnjak Park, 18.07.1996, *Q. virgiliana*; Belgrade: Lipovica Forest, 02.08.1994, *Q. cerris*; Mt. Avala, 28.07.1996, *Q. petraea*; Mt. Goč, 23.05.1994, *Q. daleschampii*; Mt. Kosmaj, 19.07.1995, *Q. cerris*; Obrenovac: Mala Moštanica, 03.08.1994, 21.07.1995, 08.04.1996, *Q. frainetto*, 03.05.1995, *Q. robur*.

##### *Chlorophorus varius* (Müller, 1766)

Višnjićevo, 22.04.1994, *Q. robur*.

##### *Exocentrus adspersus* Mulsant, 1846

Aleksinac: Vakup, 30.04.1996, *Q. cerris*; Belgrade: Košutnjak Park, 14.03.1996, *Q. virgiliana*; Belgrade:

Lipovica Forest, 02.08.1994, *Q. frainetto*, 22.07.1995, 13.03.1996, *Q. cerris*; Mt. Avala, 25.07.1995, 28.07.1996, *Q. petraea*; Mt. Kosmaj, 19.07.1995, *Q. cerris*; Smederevska Palanka: Mikulja Forest, 25.10.1994, *Q. frainetto*; Šid: Višnjićevo, 22.04.1994, *Q. robur*.

*Leiopus nebulosus* (Linnaeus, 1758)

Belgrade: Košutnjak Park, 23.03.1994, *Q. virgiliana*; Mt. Fruška Gora: Brankovac, 13.03.1992, *Q. petraea*; Mt. Miroč, 03.04.1998, *Q. petraea*; Progar: Bojčin Forest, 27.07.1995, 14.02.1998, *Q. robur*.

*Mesosa curculionoides* (Linnaeus, 1761)

Belgrade: Košutnjak Park, 17.07.1995, *Q. frainetto*; Majdanpek: Debeli Lug, 17.07.1992, 31.03.1994, *Q. petraea*; Progar: Bojčin Forest, 05.08.1994, 27.07.1995, *Q. robur*.

*Neoclytus acuminatus* (Fabricius, 1775)

Obrenovac: Mala Moštanica, 28.07.1996, *Q. cerris*.

*Phymatodes alni* (Linnaeus, 1767)

Aleksinac: Gornji Krupac, 14.08.1997, *Q. petraea*; Aleksinac: Vakup, 30.04.1996, *Q. cerris* and *Q. frainetto*; Belgrade: Košutnjak Park, 01.08.1994, *Q. cerris*, 01.08.1994, 18.07.1996, 28.08.1997, *Q. virgiliana*, 17.07.1995, 28.08.1997, *Q. frainetto*; Belgrade: Lipovica Forest, 02.08.1994, *Q. cerris*, 22.07.1995, 22.07.1996, *Q. frainetto*; Bovan Lake: Osoje, 29.11.1992, 02.05.1996, *Q. cerris*, 07.07.1996, *Q. frainetto*; Majdanpek: Debeli Lug, 09.04.1992, 31.03.1994, *Q. petraea*; Mt. Avala, 04.08.1994, 04.05.1995, 25.07.1995, 28.07.1996, *Q. petraea*; Mt. Fruška Gora: Brankovac, 08.03.1998, *Q. cerris*; Mt. Goč, 23.05.1994, *Q. daleschampii*; Mt. Kosmaj, 19.07.1995, *Q. cerris* and *Q. frainetto*; Obrenovac: Mala Moštanica, 03.08.1994, 21.07.1995, 08.04.1996, *Q. frainetto*, 03.08.1994, 03.05.1995, 03.05.1997, *Q. robur*, 28.07.1996, *Q. cerris*; Progar: Bojčin Forest, 10.04.1994, 02.05.1995, 06.08.1996, *Q. robur*; Stepojevac: Borački Gaj Forest, 09.04.1993, *Q. cerris*; Valjevo: Carić, 15.04.1993, *Q. cerris*.

*Phymatodes pusillus* (Fabricius, 1787)

Bovan Lake: Osoje, 29.11.1992, *Q. cerris*; Majdanpek: Debeli Lug, 09.04.1992, 17.07.1992, 31.03.1994, *Q. petraea*; Mt. Kosmaj, 07.08.1994, 09.05.1996, 19.07.1995, *Q. cerris*, 19.07.1995, *Q. frainetto*; Mt. Avala, 04.08.1994, 25.07.1995, *Q. petraea*; Obrenovac: Mala Moštanica, 21.07.1995, 08.04.1996, *Q. frainetto*, 28.07.1996, *Q. cerris*; Belgrade: Košutnjak Park, 17.07.1995, 28.08.1997, *Q. cerris*, 18.07.1996, *Q. virgiliana*; Progar: Bojčin Forest, 02.05.1995, *Q. robur*; Šid: Višnjićevo, 22.04.1994, *Q. robur*.

*Phymatodes testaceus* (Linnaeus, 1758)

Belgrade: Košutnjak Park, 01.08.1994, *Q. cerris*; Bovan Lake: Osoje, 29.11.1992, *Q. cerris*; Majdanpek: Debeli Lug, 31.03.1994, *Q. petraea*; Mt. Avala, 04.08.1994, *Q. petraea*; Mt. Goč, 23.05.1994, *Q. daleschampii*; Obrenovac: Mala Moštanica, 08.04.1996, *Q. frainetto*.

*Plagionotus arcuatus* (Linnaeus, 1758)

Majdanpek: Debeli Lug, 31.03.1994, *Q. petraea*; Mt. Goč, 23.05.1994, *Q. daleschampii*.

*Pyrrhidium sanguineum* (Linnaeus, 1758)

Mt. Avala, 25.07.1995, 28.07.1996, *Q. petraea*; Belgrade: Košutnjak Park, 17.07.1995, *Q. frainetto*,

18.07.1996, *Q. virgiliana*; Mt. Kosmaj, 19.07.1995, *Q. cerris*.

*Ropalopus femoratus* (Linnaeus, 1758)

Progar: Bojčin Forest, 05.08.1994, *Q. robur*.

*Xylotrechus antilope* (Schönherr, 1817)

Aleksinac: Donje Suhotno, 13.08.1996, *Q. frainetto*; Aleksinac: Gornji Krupac, 14.08.1997, *Q. petraea*; Arandelovac: Banja, 26.03.1994, *Q. frainetto*; Belgrade: Košutnjak Park, 23.03.1994, 01.08.1994, 14.03.1996, 18.07.1996, *Q. virgiliana*, 01.08.1994, 26.01.1995, *Q. cerris*, 01.08.1994, *Q. rubra*; Belgrade: Lipovica Forest, 20.02.1993, 11.03.1994, 02.08.1994, 05.05.1995, 22.07.1995, 13.03.1996, *Q. cerris*, 20.02.1993, *Q. petraea*, 08.08.1993, *Quercus* sp., 11.03.1994, 02.08.1994, 22.07.1995, *Q. frainetto*; Bogovađa, 08.04.1994, *Q. cerris* and *Q. frainetto*; Boljevci: Crni Lug Forest, 28.02.1998, *Q. robur*; Bovan Lake: Osoje, 29.11.1992, *Q. cerris*; Đerdap National Park: Zlatica, 11.04.1992, 15.05.1992, 07.05.1993, *Q. petraea*; Majdanpek: Debeli Lug, 09.04.1992, 27.05.1992, 17.07.1992, 31.03.1994, *Q. petraea*; Mladenovac: Markovac, 04.04.1994, *Q. robur*; Mt. Avala, 29.10.1992, 23.04.1993, 17.10.1993, 04.08.1994, 04.05.1995, 25.07.1995, 09.04.1996, 28.07.1996, *Q. petraea*; Mt. Deli Jovan, 03.04.1998, *Q. petraea*; Mt. Fruška Gora: Brankovac, 13.03.1992, *Q. petraea*; Mt. Goč, 17.05.1993, *Q. daleschampi*; Mt. Kosmaj, 01.08.1992, *Q. frainetto*, 15.11.1992, 15.07.1992, 15.01.1993, 19.01.1993, 31.01.1993, 01.03.1993, 15.04.1993, 01.05.1993, *Quercus* sp., 14.05.1993, 30.07.1993, 15.03.1994, 07.08.1994, 09.05.1996, *Q. cerris*; Mt. Venčac, 26.03.1994, *Q. frainetto*; Mt. Zlatibor: Mačkat, 19.11.1992, *Q. cerris*, Obrenovac: Mala Moštanica, 19.02.1993, 29.03.1994, 08.04.1996, *Q. cerris*, 03.08.1994, 03.05.1995, 21.07.1995, *Q. robur*, 21.07.1995, 08.04.1996, *Q. frainetto*; Obrenovac: Zabran Forest, 05.03.1993, *Q. robur*; Pečka Banja, 01.07.1993, *Q. pubescens*; Prijepolje: Srijeteži, 15.07.1992, *Q. cerris*; Progar: Bojčin Forest, 07.08.1992, 01.08.1993, 10.04.1994, 05.08.1994, 02.05.1995, 27.07.1995, 06.08.1996, *Q. robur*, 05.08.1994, *Q. cerris*; Rajlja: Trešnja, 21.02.1993, *Q. frainetto*; Smederevska Palanka: Mikulja Forest, 25.10.1994, *Q. cerris* and *Q. frainetto*; Šid: Višnjićevo, 22.04.1994, *Q. robur*, Topola: Krčevac, 27.03.1994, *Q. robur*, Valjevo: Carić, 15.04.1993, *Q. cerris* and *Q. frainetto*.

Family Curculionidae

*Gasterocercus depressirostris* (Fabricius, 1792)

Mt. Fruška Gora: Brankovac, 13.03.1992, *Q. petraea*; Obrenovac: Mala Moštanica, 29.03.1994, *Q. cerris*.

*Magdalis flavicornis* (Gyllenhal, 1836)

Obrenovac: Mala Moštanica, 03.08.1994, *Q. frainetto*.

*Taphrorychus villifrons* (Dufour, 1843)

Valjevo: Carić, 15.04.1993, *Q. cerris*.

*Xyleborus dispar* (Fabricius, 1792)

Đerdap National Park: Zlatica, 07.05.1993, *Q. petraea*.

## Order Diptera

## Family Cecidomyiidae

*Resseliella quercivora* (Mamaev, 1965)

Belgrade: Košutnjak Park, 14.08.1992, 23.03.1994, 14.03.1996, *Q. virgiliana*, 17.07.1995, *Q. frainetto*;  
 Belgrade: Lipovica Forest, 11.03.1994, 22.07.1995, 13.03.1996, *Q. cerris*, 11.03.1994, *Q. frainetto*; Đerdap  
 National Park: Boljetin, 15.05.1992, *Q. petraea*; Đerdap National Park: Zlatica, 07.05.1993, *Q. petraea*;  
 Majdanpek: Debeli Lug, 09.04.1992, 27.05.1992, 17.07.1992, 31.03.1994, *Q. petraea*; Mladenovac:  
 Markovac, 04.04.1994, *Q. robur*; Mt. Avala, 29.10.1992, 25.07.1995, 09.04.1996, 28.07.1996, *Q. petraea*;  
 Mt. Jelova Gora, 19.11.1992, *Q. petraea*; Mt. Kosmaj, 01.08.1992, *Q. frainetto*, 17.07.1993, 30.07.1993,  
 07.08.1994, *Q. cerris*; Obrenovac: Mala Moštanica, 08.04.1996, 28.07.1996, *Q. cerris*, 08.04.1996,  
*Q. frainetto*; Ralja: Trešnja, 21.02.1993, *Q. frainetto*; Valjevo: Carić, 15.04.1993, *Q. cerris* and *Q. frainetto*;  
 Valjevo: Pećina Park, 15.04.1993, *Q. cerris*.

## Order Hymenoptera

## Family Xiphydriidae

*Xiphydria longicollis* (Geoffroy, 1785)

Majdanpek: Debeli Lug, 27.05.1992, *Q. petraea*.

## Parasitoids

## Order Hymenoptera

## Family Braconidae

*Aspicolpus carinator* (Nees, 1812)

Belgrade: Košutnjak Park, 23.03.1994, 01.08.1994, 14.03.1996, *Q. virgiliana*, 01.08.1994, *Q. cerris* and  
*Q. rubra*; Belgrade: Lipovica Forest, 20.02.1993, 11.03.1994, 02.08.1994, 13.03.1996, *Q. cerris*, 02.08.1994,  
*Q. frainetto*; Đerdap National Park: Zlatica, 11.04.1992, 15.05.1992, *Q. petraea*; Majdanpek: Debeli Lug,  
 27.05.1992, 31.03.1994, *Q. petraea*; Mt. Avala, 29.10.1992, 17.10.1993, 04.05.1995, 09.04.1996,  
 28.07.1996, *Q. petraea*; Mt. Fruška Gora: Brankovac, 13.03.1992, *Q. petraea*; Mt. Goč, 17.05.1993,  
*Q. daleschampii*; Mt. Kosmaj, 01.08.1992, *Q. frainetto*, 30.07.1993, 15.03.1994, 07.08.1994, 09.05.1996,  
*Q. cerris*; Obrenovac: Mala Moštanica, 19.02.1993, 29.03.1994, *Q. cerris*; Progar: Bojčin Forest, 05.08.1994,  
*Q. cerris*, 05.08.1994, 27.07.1995, *Q. robur*; Ralja: Trešnja, 21.02.1993, *Q. frainetto*; Valjevo: Pećina Park,  
 15.04.1993, *Q. cerris*.

*Doryctes fulviceps* Reinhard, 1865

Smederevska Palanka: Mikulja Forest, 06.03.1993, *Q. cerris*.

*Doryctes heydenii* Reinhard, 1865

Majdanpek: Debeli Lug, 31.03.1994, *Q. petraea*.



*Doryctes leucogaster* (Nees, 1834)

Aleksinac: Vakup, 30.04.1996, *Q. frainetto*; Belgrade: Košutnjak Park, 23.03.1994, 14.03.1996, *Q. virgiliana*; Belgrade: Lipovica Forest, 20.02.1993, *Q. petraea*, 11.03.1994, 22.07.1995, 13.03.1996, *Q. cerris*, 02.08.1994, *Q. frainetto*; Đerdap National Park: Zlatica, 11.04.1992, 15.05.1992, *Q. petraea*; Majdanpek: Debeli Lug, 09.04.1992, 27.05.1992, 31.03.1994, *Q. petraea*; Mt. Avala, 17.10.1993, 04.08.1994, 04.05.1995, 09.04.1996, *Q. petraea*; Mt. Fruška Gora: Brankovac, 13.03.1992, *Q. petraea*; Mt. Jelova Gora, 19.11.1992, *Q. petraea*; Mt. Kosmaj, 14.05.1993, 15.03.1994, 07.08.1994, *Q. cerris*; Obrenovac: Mala Moštanica, 29.03.1994, *Q. cerris*, 03.08.1994, 03.05.1995, *Q. robur*, 21.07.1995, *Q. frainetto*; Progar: Bojčin Forest, 07.08.1992, 10.04.1994, 27.07.1995, 06.08.1996, *Q. robur*; Smederevska Palanka: Mikulja Forest, 06.03.1993, 25.10.1994, *Q. cerris*; Valjevo: Carić, 15.04.1993, *Q. cerris* and *Q. frainetto*.

*Doryctes undulates* (Ratzeburg, 1852)

Aleksinac: Vakup, 30.04.1996, *Q. frainetto*; Belgrade: Košutnjak Park, 23.03.1994, *Q. virgiliana*, 01.08.1994, *Q. cerris*; Majdanpek: Debeli Lug, 09.04.1992, *Q. petraea*; Mt. Avala, 04.05.1995, 25.07.1995, *Q. petraea*; Obrenovac: Mala Moštanica, 03.05.1995, *Q. robur*; Progar: Bojčin Forest, 05.08.1994, *Q. robur*, 21.07.1995, *Q. frainetto*; Šid: Višnjićevo, 22.04.1994, *Q. robur*.

*Eubazus semirugosus* (Nees, 1816)

Mt. Avala, 09.04.1996, *Q. petraea*.

*Helcon tardator* Nees, 1812

Belgrade: Košutnjak Park, 17.07.1995, *Q. frainetto*; Mt. Avala, 04.08.1994, *Q. petraea*; Obrenovac: Mala Moštanica, 08.04.1996, *Q. cerris* and *Q. frainetto*.

*Polystenus rugosus* Förster, 1862

Belgrade: Košutnjak Park, 13.08.1992, 23.03.1994, 14.03.1996, *Q. virgiliana*, 17.07.1995, *Q. frainetto*; Belgrade: Lipovica Forest, 20.02.1993, 11.03.1994, 02.08.1994, 22.07.1995, 13.03.1996, *Q. cerris*, 20.02.1993, 11.03.1994, *Q. petraea*, 02.08.1994, 22.07.1995, *Q. frainetto*; Bovan Lake: Osoje, 29.11.1992, *Q. cerris*; Đerdap National Park: Zlatica, 11.04.1992, 15.05.1992, *Q. petraea*; Majdanpek: Debeli Lug, 09.04.1992, 27.05.1992, 31.03.1994, *Q. petraea*; Mladenovac: Markovac, 04.04.1994, *Q. robur*; Mt. Avala, 29.10.1992, 17.10.1993, 04.08.1994, 04.05.1995, 09.04.1996, *Q. petraea*; Mt. Kosmaj, 01.08.1992, *Q. frainetto*, 01.08.1993, 15.03.1994, 07.08.1994, *Q. cerris*; Obrenovac: Mala Moštanica, 07.08.1993, 29.03.1994, 28.07.1996, *Q. cerris*, 03.08.1994, 21.07.1995, 08.04.1996, *Q. frainetto* and *Q. robur*; Progar: Bojčin Forest, 07.08.1992, 10.04.1994, 05.08.1994, 27.07.1995, 06.08.1996, *Q. robur*, 05.08.1994, *Q. cerris*; Smederevska Palanka: Mikulja Forest, 25.10.1994, *Q. frainetto*; Topola: Krčevac, 27.03.1994, *Q. robur*; Valjevo: Carić, 15.04.1993, *Q. cerris* and *Q. frainetto*.

*Spathius curvicaudis* Ratzeburg, 1844

Mt. Avala, 04.08.1994, *Q. petraea*.

*Spathius exarator* (Linnaeus, 1758)

Bovan Lake: Osoje, 29.11.1992, *Q. cerris*; Đerdap National Park: Velika Kamenica, 07.05.1993, *Q. frainetto*.

## Family Eulophidae

*Melittobia acasta* (Walker, 1839)

Progar: Bojčin Forest, 07.08.1992, *Q. robur*.

## Family Eupelmidae

*Calosota acron* (Walker, 1848)

Đerdap National Park: Zlatica, 15.05.1992, *Q. petraea*; Majdanpek: Debeli Lug, 27.05.1992, *Q. petraea*; Obrenovac: Mala Moštanica, 08.04.1996, *Q. frainetto*.

*Calosota aestivalis* Curtis, 1836

Stepojevac: Borački Gaj Forest, 09.04.1993, *Q. cerris*.

*Calosota agrili* Nikolskaya, 1952

Mt. Avala, 04.08.1994, *Q. petraea*; Višnjićevo, 22.04.1994, *Q. robur*.

*Metapelma nobile* (Förster, 1860)

Majdanpek: Debeli Lug, 09.04.1992, 31.03.1994, *Q. petraea*; Obrenovac: Mala Moštanica, 08.04.1996, *Q. frainetto*.

## Family Eurytomidae

*Eurytoma gyorfii* Erdős, 1957

Obrenovac: Mala Moštanica, 03.08.1994, *Q. robur*.

*Eurytoma wachtli* Mayr, 1878

Mt. Avala, 04.08.1994, *Q. petraea*; Obrenovac: Mala Moštanica, 03.08.1994, *Q. robur*.

## Family Ichneumonidae

*Neoxorides nitens* (Gravenhorst, 1829)

Belgrade: Košutnjak Park, 17.07.1995, *Q. frainetto*; Đerdap National Park: Zlatica, 15.05.1992, *Q. petraea*; Majdanpek: Debeli Lug, 09.04.1992, 27.05.1992, *Q. petraea*; Mt. Avala, 29.10.1992, 04.08.1994, 25.07.1995, *Q. petraea*.

*Xorides filiformis* (Gravenhorst, 1829)

Belgrade: Košutnjak Park, 17.07.1995, *Q. frainetto*.

*Xorides gravenhorstii* (Curtis, 1831)

Mt. Avala, 04.08.1994, *Q. petraea*.

*Xorides minutus* Clément, 1938

Bovan Lake: Osoje, 29.11.1992, *Q. cerris*; Majdanpek: Debeli Lug, 09.04.1992, 31.03.1994, *Q. petraea*.

*Xorides praecatorius* (Fabricius, 1793)

Mt. Avala, 25.07.1995, 28.07.1996, *Q. petraea*; Belgrade: Košutnjak Park, 18.07.1996, *Q. virgiliana*.

Family Pteromalidae

*Oodera formosa* (Giraud, 1863)

Aleksinac: Vakup, 30.04.1996, *Q. frainetto*; Bovan Lake: Osoje, 02.05.1996, *Q. cerris*.

*Platygerthus affinis* (Walker, 1836)

Mt. Avala, 28.07.1996, *Q. petraea*.

*Trigonoderus princeps* Westwood, 1832

Mt. Avala, 25.07.1995, *Q. petraea*.

*Xiphydriophagus meyerinckii* (Ratzeburg, 1848)

Majdanpek: Debeli Lug, 27.05.1992, *Q. petraea*.

Family Stephanidae

*Stephanus serrator* (Fabricius, 1798)

Aleksinac: Donje Suhotno, 13.08.1996, *Q. frainetto*; Aleksinac: Vakup, 30.04.1996, *Q. frainetto*; Belgrade: Lipovica Forest, 11.03.1994, 05.05.1995, *Q. cerris*; Majdanpek: Debeli Lug, 27.05.1992, *Q. petraea*; Mt. Avala, 29.10.1992, 04.05.1995, *Q. petraea*; Smederevska Palanka: Mikulja Forest, 06.03.1993, *Q. cerris*.

Inquilines

Order Coleoptera

Family Anthribidae

*Tropideres albirostris* (Schaller, 1783)

Progar: Bojčin Forest, 02.05.1995, *Q. robur*.

*Rhaphitropis marchica* (Herbst, 1797)

Mt. Fruška Gora: Brankovac, 13.03.1992, *Q. petraea*; Obrenovac: Mala Moštanica, 03.08.1994, *Q. robur* L.; Progar: Bojčin Forest, 05.08.1994, *Q. robur*.

## Order Diptera

## Family Cecidomyiidae

*Asynapta pectoralis* (Winnertz, 1853)

Belgrade: Lipovica Forest, 20.02.1993, 22.07.1995, 13.03.1996, *Q. cerris*, 20.02.1993, *Q. petraea*; Đerdap National Park: Zlatica, 07.05.1993, *Q. petraea*; Majdanpek: Debeli Lug, 17.07.1992, 31.03.1994, *Q. petraea*; Mt. Avala, 29.10.1992, 17.10.1993, 28.07.1996, *Q. petraea*; Mt. Kosmaj, 01.08.1992, 30.07.1993, 15.03.1994, *Q. cerris*; Rajča: Trešnja, 21.02.1993, *Q. frainetto*; Smederevska Palanka: Mikulja Forest, 06.03.1993, *Q. cerris*; Valjevo: Carić, 15.04.1993, *Q. cerris* and *Q. frainetto*.

## Order Thysanoptera

## Family Phlaeothripidae

*Megalothrips bonannii* Uzel, 1895

Obrenovac: Mala Moštanica, 03.05.1995, *Q. robur*; Smederevska Palanka: Mikulja Forest, 06.03.1993, *Q. frainetto*.

*Phlaeothrips coriaceus* Haliday, 1836

Bovan Lake: Osoje, 02.05.1996, *Q. cerris*; Majdanpek: Debeli Lug, 17.07.1992, *Q. petraea*; Mt. Avala, 23.04.1993, *Q. petraea*; Progar: Bojčin Forest, 22.04.1996, *Q. robur*.

*Phlaeothrips pillichianus* Priesner, 1924

Aleksinac: Vakup, 30.04.1996, *Q. frainetto*; Bovan Lake: Osoje, 02.05.1996, *Q. cerris*; Đerdap National Park: Zlatica, 07.05.1993, *Q. petraea*.

*Poecilothrips albopictus* Uzel, 1895

Arandelovac: Banja, 26.03.1994, *Q. frainetto*; Belgrade: Košutnjak Park, 22.07.1993, 23.03.1994, 14.03.1996, *Q. virgiliana*, 01.08.1994, *Q. rubra*; Belgrade: Lipovica Forest, 20.02.1993, 02.08.1994, *Q. cerris*; Bogovađa, 08.04.1994, *Q. frainetto*; Majdanpek: Debeli Lug, 09.04.1992, 17.07.1992, *Q. petraea*; Mt. Avala, 29.10.1992, 23.04.1993, 25.07.1995, 28.07.1996, *Q. petraea*; Mt. Kosmaj, 01.08.1992, 30.07.1993, 15.03.1994, 19.07.1995, *Q. cerris*; Obrenovac: Mala Moštanica, 19.02.1993, *Q. cerris*, 07.08.1993, 03.08.1994, *Q. frainetto*, 03.08.1994, 03.05.1995, *Q. robur*, 28.07.1996, *Q. cerris*; Progar: Bojčin Forest, 07.08.1992, 01.08.1993, 10.04.1994, 05.08.1994, *Q. robur*; Topola: Krčevac, 27.03.1994, *Q. robur*.

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# НОВИ ПОДАЦИ О РАСПРОСТРАЊЕЊУ КСИЛОФАГНИХ ИНСЕКТА ХРАСТА И ЊИХОВИХ ПАРАЗИТОИДА И ИНКВИЛИНА У СРБИЈИ

ЧЕДОМИР МАРКОВИЋ И АЛЕКСАНДАР СТОЈАНОВИЋ

## Извод

Проучавањем биологије хрстовог поткорњака *Scolytus intricatus* у периоду од 1992. до 1998. године на четрдесет једном локалитету у Србији прикупљено је много података о распрострањењу инсеката који су са њим повезани или насељавају исти биљни материјал. Део тих података је објављен. Међутим, већи део није. Ти необјављени подаци су у овом раду наведени. Он садржи списак од 58 врста из 4 реда, 15 фамилија и 45 родова. За сваку врсту у њему је наведен локалитет, датум и врста хрста на којој је пронађена.

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